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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,702	09/09/2003	John G. Carter	51743	2308
21874	7590	04/27/2005	EXAMINER	
EDWARDS & ANGELL, LLP P.O. BOX 55874 BOSTON, MA 02205			AHMED, SHAMIM	
			ART UNIT	PAPER NUMBER
			1765	

DATE MAILED: 04/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/658,702

Applicant(s)

CARTER ET AL.

Examiner

Shamim Ahmed

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 9-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/29/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-8, drawn to a composition, classified in class 252, subclass 79.3.
  - II. Claims 9-13, drawn to a process of making the composition, classified in class 252, subclass 79.1.
  - III. Claims 14-20, drawn to a microetching process, classified in class 216, subclass 100.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the composition can be made by different process such as mixing all the constituents together.
3. Inventions I and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the composition can be used in a materially different process such as etching semiconductor material.

4. Inventions II and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different modes of operation such as mixing the constituents in specific ways to form a composition is not essential in the invention of Group III.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with John Piskorski on 4/18/05 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-8. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1,3-4 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Morrissey et al (US 2002/0000382).

Morrissey et al teach a composition comprises persulfate, a fluorine containing acid such as fluoroboric acid (paragraph 0034 and 0035).

Morrissey et al also teach that the composition also contain boric acid for maintaining desired pH in the composition (0027).

As to claim 4, Morrissey et al teach that borate salt of sodium or potassium and the like can be used as buffering action (paragraphs 0027-0028).

As to claim 7, Morrissey et al teach that the composition also contain surfactant (0031).

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1,3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schemenaur et al (6,444,140) in view of McLaughlin, Jr. (4,256,602).

Schemenaur et al disclose a micro-etching composition for metal surfaces including copper, aluminum or alloys thereof, wherein the composition comprises: sulfuric acid and an oxidizing agent such as persulfate compounds or peroxides (col.2, lines 63-67 and col. 3, lines 12-35).

Schemenaur et al teach that additives such as benzotriazoles are added to the composition for enhancing the efficiency of the composition (col.3, lines 46-52).

Schemenaur et al fails to teach the presence of fluorine containing acid and boric acid in the composition.

However, McLaughlin, Jr. teaches that unexpected results are obtained with the use of additives such as hydrofluoric acid and boric acid (fluoroborate complex) in an acid cleaning solution for aluminum cleaning by removing and dissolving aluminum fines (col.1, lines 59-68 and col.2, lines 19-22).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to modify Schemenaur et al's composition with the teaching of

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McLaughlin, Jr. for increasing the cleaning efficiency of metal surfaces such as aluminum or aluminum alloys as taught by McLaughlin, Jr.

As to claim 7, McLaughlin, Jr. teaches that surfactants and other components may be added to the composition for enhancing the cleaning efficiency (col.2, lines 51-52).

13. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schemenaur et al (6,444,140) in view of McLaughlin, Jr. (4,256,602) as applied to claims 1,3 and 5-7 above, and further in view of Margulies et al (3,137,600).

Modified Schemenaur et al discusses above in the paragraph 12 but fail to teach that the persulfate comprises sodium or potassium monopersulfate.

However, Margulies et al teach that monopersulfates such as potassium monopersulfate is advantageous in metal dissolution composition compare to other persulfates, wherein monopersulfate solution has higher rate of dissolution for copper (col.2, lines 32-54).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to modify the modified Schemenaur et al's composition with the teaching of Margulies et al for increasing the efficiency of the composition as taught by Margulies et al.

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14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schemenaur et al (6,444,140) in view of McLaughlin, Jr. (4,256,602) and Margulies et al (3,137,600) as applied to claim 2 above, and further in view of McNeil et al (5,669,980).

Modified Schemenaur et al discusses above in the paragraph 13 but fail to teach that the fluorine containing acid is fluoroboric acid.

However, McNeil et al teach a cleaning composition for aluminum, in which source of fluoride ion is hydrofluoric acid or fluoroboric acid (col.7, lines 2-5).

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of claimed invention to combine McNeil et al's teaching into modified Schemenaur et al's composition because both the hydrofluoric acid and fluoroboric acid are functionally equivalent as taught by McNeil et al.

### ***Conclusion***

15. The prior art made of record cited in PTO-892 and not relied upon is considered pertinent to applicant's disclosure.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shamim Ahmed whose telephone number is (571) 272-1457. The examiner can normally be reached on M-Thu (7:00-5:30) Every Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G. Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shamim Ahmed  
Primary Examiner  
Art Unit 1765

SA  
April 24, 2005